

NMCP COVID-19 Report #15: Tuesday, 19 May 2020

Prepared By: Tracy Shields, MSIS, AHIP <tracy.c.shields2.civ@mail.mil>

Reference Medical Librarian; Naval Medical Center Portsmouth, Library Services

Disclaimer: I am not a medical professional. This document is current as of the date noted above. While I make every effort to find and summarize available data, things are changing rapidly, with new research and potentially conflicting literature published daily. Best practice and evidence are constantly shifting during this international public health crisis.

Reports are biweekly, planned for Tuesdays and Fridays.

Statistics

Global 4,834,449 confirmed cases and 319,147 deaths in 188 countries/regions

*United States** top 5 states by cases (Virginia is ranked 14th)

	TOTAL	NY	NJ	IL	MA	CA
Confirmed Cases	1,509,202	351,371	148,240	96,485	87,052	81,828
Tested	11,834,508	1,439,557	505,569	603,241	460,826	1,292,672
Recovered	NA	61,681	23,496	NA	NA	NA
Deaths	90,373	28,339	10,439	4,234	5,862	3,287

*see census.gov for current US Population data; NA: not all data available

[JHU CSSE](https://jhu-csse.org) as of 1000 EDT Tuesday, 19 May 2020

Navy (Department of Defense)

	TOTAL	MIL	CIV	DEP	CTR
Cases	1,409	1,211	122	37	39
Hospitalized	10	3	5	0	2
Recovered	1,522	1,082	244	106	90
Deaths	9	1	5	0	3
Cumulative*	2,940	2,294	371	143	132

*cumulative total = active + recovered + deaths

[DoD](https://www.dod.mil) dated Monday, 18 May 2020

<i>Virginia</i>	Total	Chesapeake	Hampton	Newport News	Norfolk	Portsmouth	Suffolk	Virginia Beach
Cases	32,145	396	164	209	370	237	269	559
Hospitalized	3,904	78	30	38	57	39	41	87
Deaths	1,041	10	3	10	6	10	25	19

[VA DOH](https://www.vahq.org) as of 1000 EDT Tuesday, 19 May 2020

Event: Information on multisystem inflammatory syndrome in children

WHAT: CDC Clinician Outreach and Communication Activity (COCA) call

WHEN: Tuesday, May 19, 2020, 1400-1530 (Eastern Time) The call will be available live via Zoom or Facebook live; advanced registration is not required. A transcript and other materials will be available a few hours after the live event ends.

"During this Clinician Outreach and Communication Activity (COCA) call, clinicians will learn about the clinical characteristics of multisystem inflammatory syndrome in children, how cases have been diagnosed and treated, and how clinicians are responding to recently reported cases associated with COVID-19."

For more information, see: https://emergency.cdc.gov/coca/calls/2020/callinfo_051920.asp

Summary: Recovering from COVID-19

Time Until Recovery

According to preliminary data from the World Health Organization, the median time from onset to clinical recovery with COVID-19 for mild cases is approximately 2 weeks and 3-6 weeks for patients with severe or critical disease ([WHO](#)). There is increasing suggestion, however, that recovery is not immediate or as simple as a "wait a few weeks and you're good" approach.

Patients recovering from COVID-19 (be it a mild, moderate, or a severe case) may have lingering sequelae, suffer long-term damage or disability, or have late-term complications from the disease ([MedPage](#); [Science](#)). Patients with mild to moderate COVID-19 cases managed at home and without need of intervention complain of fatigue, breathing troubles, and heart problems for days and weeks after being sick from SARS-CoV-2 ([MedPage](#)). For patients who had severe cases of COVID-19, recovery could take months ([Science](#)).

COVID-19 Recovery and Long-Term Effects

As one article notes, "because COVID-19 is a new disease, there are no studies about its long-term trajectory for those with more severe symptoms; even the earliest patients to recover in China were only infected a few months ago" ([Vox](#)). That said, there is growing evidence of possible longer-term, non-acute effects of COVID-19, including:

- alterations in metabolic and lipid profiles ([medRxiv*](#));
- pulmonary changes and scarring ([Radiology](#)) even in asymptomatic cases ([J Infect \[Meng\]](#));
- cardiovascular damage ([JAMA Cardiol](#)) including strokes ([NEJM](#) [Oxley]) and thromboembolic complications ([Thromb Res](#));

- urogenital issues such as kidney injury ([Nature](#)) and possible fertility problems in men ([World J Urol](#));
- neurocognitive and neurological impairments ([NEJM](#) [Helms]); and
- mental health concerns including depression, anxiety, PTSD, post-ICU syndrome, and dysexecutive function ([MedPage](#)).

The multisystem effects of SARS-CoV-2 could be related to angiotensin I converting enzyme 2 (ACE2) expression in lung epithelial cells and other tissues, including blood vessels, the kidneys, the small intestine, the testes, and the brain ([J Microbiol Immunol Infect](#)).

SARS & MERS: Long-Term Effects

There is evidence from the SARS and MERS outbreaks that full recovery from coronaviruses can be complicated and quality of life is impacted ([Health Qual Life Outcomes](#)). SARS patients had considerably lower exercise capacity and health status, with significant impairment in surface area for gas exchange ([Thorax](#)). A 2007 study of SARS survivors in Toronto suggests physical and mental complications can greatly impact quality of life; at 1 year after hospital discharge, 18% had a significant reduction in walking distance and 17% had not returned to work ([Arch Intern Med](#)). For MERS patients, delay in recovery is associated with older age, ICU admission, and abnormal radiological findings ([Influenza Other Respir Viruses](#)).

Reinfection Versus Reactivation

According to the CDC, "there are no data concerning the possibility of reinfection with SARS-CoV-2 after recovery from COVID-19" ([CDC](#)). In a recent letter to the editor, clinicians from Italy describe a case where negative tests were followed by positive tests, and suggest COVID-19 can be 'reactivated' ([Infection](#)). A case series with 55 patients with laboratory-confirmed COVID-19 pneumonia provides some evidence for reactivation of SARS-CoV-2, as 9% developed reactivated SARS-CoV-2 after discharge ([J Infect](#) [Ye]).

Testing is blurring the lines of recovery and raising concerns of reinfection versus reactivation ([Travel Med Infect Dis](#)). Patients who have apparently recovered and had negative tests results can have positive test results later—a situation exemplified by 13 sailors from the USS Theodore Roosevelt ([NPR](#)). The WHO has investigated similar cases of late positive tests, following recovery and negative results, in Korean patients ([Reuters](#)); new data suggest they are not infectious ([Bloomberg](#)).

Additional Resources

Science magazine has a good explanatory video on the virus's impact on the body, including why it may affect systems other than respiratory ([Science](#) [video]).

For a selection of other citations that may be of interest, see this collection in PubMed:

<https://www.ncbi.nlm.nih.gov/sites/myncbi/tracy.shields.1/collections/59644387/public/>

Summaries from Other Sources

[CEBM](#): How can healthcare workers adapt non-pharmacological treatment – whilst maintaining safety – when treating people with COVID-19 and delirium? (updated 19 May 2020)

"Delirium may be part of the spectrum of COVID-19 symptoms that patients present with. In some cases, the delirium may be severe and have a rapid onset. Clinicians should have a high level of suspicion of COVID-19 when considering a possible cause of the delirium."

"Non-pharmacological interventions are the mainstay for the management of delirium in all settings; there is consistent evidence of benefit in the prevention of delirium.

Communication and care are compromised by the need for Personal Protection Equipment (PPE) in COVID-19. Use of remote consultations may be necessary and is often feasible."

[CEBM](#): Mast cell stabilisers [sic], leukotriene antagonists and antihistamines: A rapid review of effectiveness in COVID-19 (18 May 2020)

"There have been no studies examining the use of mast cell stabilisers, leukotriene antagonists or anti-histamines in COVID-19."

"Lung damage and 'cytokine storm' observed in SARS-CoV-2 infection are associated with raised pro-inflammatory cytokines. Mast cells are the main source of these. It has been speculated that mast cell stabilisers may attenuate pulmonary complications, fatal inflammation and death in COVID-19."

"It is unclear whether administration of mast cell stabilisers in COVID-19 would be beneficial. Clinical trials would be required to establish whether these drugs may be repurposed for treatment of this disease."

Selected Primary Literature

Recent – published within the last 7 days of report date in peer-reviewed journals

[JAMA](#): Seroprevalence of SARS-CoV-2–Specific Antibodies Among Adults in Los Angeles County, California, on April 10-11, 2020 (18 May 2020)

"In this community seroprevalence study in Los Angeles County, the prevalence of antibodies to SARS-CoV-2 was 4.65%. The estimate implies that approximately 367 000 adults had SARS-CoV-2 antibodies, which is substantially greater than the 8430 cumulative number of confirmed infections in the county on April 10.3 Therefore, fatality rates based on confirmed cases may be higher than rates based on number of infections. In addition, contact tracing methods to limit the spread of infection will face considerable challenges."

[Lancet Psychiatry](#): Rogers JP, Chesney E, Oliver D, et al. Psychiatric and neuropsychiatric presentations associated with severe coronavirus infections: a systematic review and meta-analysis with comparison to the COVID-19 pandemic (18 May 2020)

This systematic review and meta-analysis suggests that among patients admitted to hospital for severe SARS or MERS coronavirus infections, delirium is common acutely, whereas post-traumatic stress disorder, depression, anxiety, and fatigue are common in the following months. Preliminary data suggest patients with COVID-19 might experience delirium, confusion, agitation, and altered consciousness, as well as symptoms of depression, anxiety, and insomnia."

"Previous coronavirus epidemics were associated with a significant psychiatric burden in both the acute and post-illness stages. In the current COVID-19 pandemic, there is already evidence of delirium acutely and clinicians should be alert to the possibility of high rates of common mental disorders in the longer term. High-quality, peer-reviewed research into psychiatric symptoms of patients infected with SARS-CoV-2 as well as into potential mitigating factors and interventions is needed."

[Nature](#): Cross-neutralization of SARS-CoV-2 by a human monoclonal SARS-CoV antibody (18 May 2020)

"SARS-CoV-2 is a newly emerged coronavirus responsible for the current COVID-19 pandemic that has resulted in more than 3.7 million infections and 260,000 deaths as of 6 May 2020. Vaccine and therapeutic discovery efforts are paramount to curb the pandemic spread of this zoonotic virus. The SARS-CoV-2 spike (S) glycoprotein promotes entry into host cells and is the main target of neutralizing antibodies. Here we describe multiple monoclonal antibodies targeting SARS-CoV-2 S identified from memory B cells of an individual who was infected with SARS-CoV in 2003. One antibody, named S309, potently neutralizes SARS-CoV-2 and SARS-CoV pseudoviruses as well as authentic SARS-CoV-2 by engaging the S receptor-binding domain. Using cryo-electron microscopy and binding assays, we show that S309 recognizes a glycan-containing epitope that is conserved within the sarbecovirus subgenus, without competing with receptor attachment. Antibody cocktails including S309 along with other antibodies identified here further enhanced SARS-CoV-2 neutralization and may limit the emergence of neutralization-escape mutants. These results pave the way for using S309- and S309-containing antibody cocktails for prophylaxis in individuals at high risk of exposure or as a post-exposure therapy to limit or treat severe disease."

[Int J Infect Dis](#): Factors associated with duration of viral shedding in adults with COVID-19 outside of Wuhan, China: A retrospective cohort study (17 May 2020)

"This is the study with relatively large sample size that mainly focused on the duration of viral shedding and relevant factors in patients with COVID-19 outside of Wuhan, China. The median duration of viral shedding in patients with COVID-19 outside of Wuhan in the

current study was 17 days. The highest temperature at admission, time from symptoms onset to admission and hospital length of stay were risk factors for prolonged duration of viral shedding."

[Ann Intern Med](#): Risks and Impact of Angiotensin-Converting Enzyme Inhibitors or Angiotensin-Receptor Blockers on SARS-CoV-2 Infection in Adults: A Living Systematic Review (15 May 2020)

"High-certainty evidence suggests that ACEI or ARB use is not associated with more severe COVID-19 disease, and moderate-certainty evidence suggests no association between use of these medications and positive SARS-CoV-2 test results among symptomatic patients. Whether these medications increase the risk for mild or asymptomatic disease or are beneficial in COVID-19 treatment remains uncertain."

[Cell](#): Imbalanced Host Response to SARS-CoV-2 Drives Development of COVID-19 (15 May 2020)

"Viral pandemics, such as the one caused by SARS-CoV-2, pose an imminent threat to humanity. Because of its recent emergence, there is a paucity of information regarding viral behavior and host response following SARS-CoV-2 infection. Here we offer an in-depth analysis of the transcriptional response to SARS-CoV-2 compared with other respiratory viruses. Cell and animal models of SARS-CoV-2 infection, in addition to transcriptional and serum profiling of COVID-19 patients, consistently revealed a unique and inappropriate inflammatory response. This response is defined by low levels of type I and III interferons juxtaposed to elevated chemokines and high expression of IL-6. We propose that reduced innate antiviral defenses coupled with exuberant inflammatory cytokine production are the defining and driving features of COVID-19."

[JAMA Netw Open](#): Comparison of Estimated Rates of Coronavirus Disease 2019 (COVID-19) in Border Counties in Iowa Without a Stay-at-Home Order and Border Counties in Illinois With a Stay-at-Home Order (15 May 2020)

"This cross-sectional study of border counties in Iowa and Illinois used difference-in-differences design and found an increase in estimated rates of COVID-19 cases per 10 000 residents in the border counties in Iowa compared with the border counties in Illinois after a stay-at-home order was implemented in Illinois but not in Iowa. The results of this study suggest that issuing a stay-at-home order in Iowa may have helped limit the spread of COVID-19 cases in that state."

ICYMI—older than last 7 days

[Clin Infect Dis](#): Bacterial and fungal co-infection in individuals with coronavirus: A rapid review to support COVID-19 antimicrobial prescribing (02 May 2020)

"For COVID-19, 62/806 (8%) patients were reported as experiencing bacterial/fungal co-infection during hospital admission. Secondary analysis demonstrated wide use of broad-spectrum antibacterials, despite a paucity of evidence for bacterial coinfection. On

secondary analysis, 1450/2010 (72%) of patients reported received antimicrobial therapy. No antimicrobial stewardship interventions were described."

Despite frequent prescription of broad-spectrum empirical antimicrobials in patients with coronavirus associated respiratory infections, there is a paucity of data to support the association with respiratory bacterial/fungal co-infection. Generation of prospective evidence to support development of antimicrobial policy and appropriate stewardship interventions specific for the COVID-19 pandemic are urgently required."

In Brief

The Army is using technology designed to find terrorist threats to monitor the spread of COVID-19 ([DOD](#)).

"We need less extreme and more nuanced recommendations for navigating life during the pandemic" ([Atlantic](#)).

The Coronavirus Chronicles is a collection of stories about life during the pandemic, based on the personal and professional experiences of the faculty, students, and alumni of George Mason University's Schar School of Policy and Government Biodefense program ([Pandora Report](#)).

Research & Vaccine Development

'Operation Warp Speed': "a public-private partnership to facilitate, at an unprecedented pace, the development, manufacturing, and distribution of COVID-19 countermeasures, between components of HHS, including CDC, FDA, NIH, and the Biomedical Advanced Research and Development Authority (BARDA); the Department of Defense; private firms; and other federal agencies" ([HHS](#)).

Preliminary data from the early, limited trial of one vaccine candidate from Moderna suggest it is safe ([NPR](#)).

The president has threatened to permanently cut funding to the World Health Organization and 'reconsider' membership if the WHO doesn't address 'substantial improvements' ([WashPo](#)).

Meanwhile, China's president has pledged \$2 billion to fight the virus ([NYT](#)).

Mental Health, Wellness, & Resilience

Mental health experts fear that healthcare workers—already vulnerable to depression and suicide before the current pandemic—may be more prone to trauma-related disorders ([NYT](#)).

Need a break from all the doom and gloom surrounding the pandemic? Self-care is your best bet. Try to relax and disconnect by watching Some Good News ([YT](#)) or Bob Ross paint some

happy little trees ([YT](#)). You can also learn how to grow a mandala ([YT](#)) or take your doodling to the next level with zentangles ([YT](#)).

Long Form and In-Depth Articles

100,000 crew members have been stuck on ships for months—unpaid and unable to leave—after the outbreak shut down the cruise ship business ([Miami Herald](#)).

References

Statistics

DOD Department of Defense, Navy. US Navy COVID-19 updates (accessed 28 April 2020). Link: <https://navylive.dodlive.mil/2020/03/15/u-s-navy-covid-19-updates/>

JHU CSSE: Johns Hopkins Center for Systems Science and Engineering. Coronavirus COVID-19 Global Cases. Link: <https://coronavirus.jhu.edu/map.html>

VA DOH: Virginia Department of Health. COVID-19 in Virginia, updated daily. Link: <http://www.vdh.virginia.gov/coronavirus/>

Summary: Recovering From COVID-19

Arch Intern Med: Tansey CM, Louie M, Loeb M, Gold WL, Muller MP, de Jager J, Cameron JI, Tomlinson G, Mazzulli T, Walmsley SL, Rachlis AR, Mederski BD, Silverman M, Shainhouse Z, Ephtimios IE, Avendano M, Downey J, Styra R, Yamamura D, Gerson M, Stanbrook MB, Marras TK, Phillips EJ, Zamel N, Richardson SE, Slutsky AS, Herridge MS. One-year outcomes and health care utilization in survivors of severe acute respiratory syndrome. Arch Intern Med. 2007 Jun 25;167(12):1312-20. PubMed PMID: 17592106. Link: <https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/412710>

Bloomberg: Bloomberg. Heesu Lee and Jason Gale. Covid Patients Testing Positive After Recovery Aren't Infectious, Study Shows (18 May 2020, updated 19 May 2020). Link: <https://www.bloomberg.com/news/articles/2020-05-19/covid-patients-testing-positive-after-recovery-aren-t-infectious>

CDC: Centers for Disease Control and Prevention. Interim Clinical Guidance for Management of Patients with Confirmed Coronavirus Disease (COVID-19) (updated 15 May 2020; accessed 18 May 2020). Link: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-guidance-management-patients.html>

Health Qual Life Outcomes: Batawi S, Tarazan N, Al-Raddadi R, Al Qasim E, Sindi A, Al Johni S, Al-Hameed FM, Arabi YM, Uyeki TM, Alraddadi BM. Quality of life reported by survivors after

hospitalization for Middle East respiratory syndrome (MERS). *Health Qual Life Outcomes*. 2019 Jun 11;17(1):101. doi: 10.1186/s12955-019-1165-2. PubMed PMID: 31186042; PubMed Central PMCID: PMC6560892. Link: <https://hql.o.biomedcentral.com/articles/10.1186/s12955-019-1165-2>

Infection: Loconsole D, Passerini F, Palmieri VO, Centrone F, Sallustio A, Pugliese S, Grimaldi LD, Portincasa P, Chironna M. Recurrence of COVID-19 after recovery: a case report from Italy. *Infection*. 2020 May 16. doi: 10.1007/s15010-020-01444-1. [Epub ahead of print] PubMed PMID: 32415334. Link: <https://link.springer.com/article/10.1007%2Fs15010-020-01444-1>

Influenza Other Respir Viruses: Ahmed AE, Al-Jahdali H, Alaqeel M, Siddiq SS, Alsaab HA, Sakr EA, Alyahya HA, Alandonisi MM, Subedar AT, Ali YZ, Al Otaibi H, Aloudah NM, Baharoon S, Al Johani S, Alghamdi MG. Factors associated with recovery delay in a sample of patients diagnosed by MERS-CoV rRT-PCR: A Saudi Arabian multicenter retrospective study. *Influenza Other Respir Viruses*. 2018 Sep;12(5):656-661. doi: 10.1111/irv.12560. Epub 2018 Apr 25. PubMed PMID: 29624866; PubMed Central PMCID: PMC6086845. Link: <https://onlinelibrary.wiley.com/doi/pdf/10.1111/irv.12560>

J Infect: Meng H, Xiong R, He R, Lin W, Hao B, Zhang L, Lu Z, Shen X, Fan T, Jiang W, Yang W, Li T, Chen J, Geng Q. CT imaging and clinical course of asymptomatic cases with COVID-19 pneumonia at admission in Wuhan, China. *J Infect*. 2020 Apr 12. pii: S0163-4453(20)30211-5. doi: 10.1016/j.jinf.2020.04.004. [Epub ahead of print] PubMed PMID: 32294504; PubMed Central PMCID: PMC7152865. Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7152865/pdf/main.pdf>

J Infect: Ye G, Pan Z, Pan Y, Deng Q, Chen L, Li J, Li Y, Wang X. Clinical characteristics of severe acute respiratory syndrome coronavirus 2 reactivation. *J Infect*. 2020 May;80(5):e14-e17. doi: 10.1016/j.jinf.2020.03.001. Epub 2020 Mar 20. PubMed PMID: 32171867; PubMed Central PMCID: PMC7102560. Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7102560/pdf/main.pdf>

J Microbiol Immunol Infect: Devaux CA, Rolain JM, Raoult D. ACE2 receptor polymorphism: Susceptibility to SARS-CoV-2, hypertension, multi-organ failure, and COVID-19 disease outcome. *J Microbiol Immunol Infect*. 2020 May 6. pii: S1684-1182(20)30109-2. doi: 10.1016/j.jmii.2020.04.015. [Epub ahead of print] PubMed PMID: 32414646. Link: <https://www.sciencedirect.com/science/article/pii/S1684118220301092>

JAMA Cardiol: Madjid M, Safavi-Naeini P, Solomon SD, Vardeny O. Potential Effects of Coronaviruses on the Cardiovascular System: A Review. *JAMA Cardiol*. 2020 Mar 27. doi: 10.1001/jamacardio.2020.1286. [Epub ahead of print] PubMed PMID: 32219363. Link: <https://jamanetwork.com/journals/jamacardiology/fullarticle/2763846>

MedPage: MedPage Today. Amanda D'Ambrosio. COVID-19 Sequelae Can Linger for Weeks (13 May 2020). Link: <https://www.medpagetoday.com/infectiousdisease/covid19/86482>

MedPage: MedPage Today. Kristen Monaco. Mental Health Challenges after COVID-19 Recovery (18 May 2020). Link:

<https://www.medpagetoday.com/infectiousdisease/covid19/86556>

medRxiv*: Wu D, Shu T, Yang X, et al. Plasma Metabolomic and Lipidomic Alterations Associated with COVID-19. medRxiv 2020.04.05.20053819; doi:

<https://doi.org/10.1101/2020.04.05.20053819> Link:

<https://www.medrxiv.org/content/10.1101/2020.04.05.20053819v3.full.pdf>

*bioRxiv and medRxiv are preprint servers: "[T]hese are preliminary reports that have not been peer-reviewed. They should not be regarded as conclusive, guide clinical practice/health-related behavior, or be reported in news media as established information."

Nature: Wang S, Zhou X, Zhang T, Wang Z. The need for urogenital tract monitoring in COVID-19. Nat Rev Urol. 2020 Apr 20. doi: 10.1038/s41585-020-0319-7. [Epub ahead of print] PubMed PMID: 32313110; PubMed Central PMCID: PMC7186932. Link:

<https://www.nature.com/articles/s41585-020-0319-7>

NEJM: Helms J, Kremer S, Merdji H, Clere-Jehl R, Schenck M, Kummerlen C, Collange O, Boulay C, Fafi-Kremer S, Ohana M, Anheim M, Meziani F. Neurologic Features in Severe SARS-CoV-2 Infection. N Engl J Med. 2020 Apr 15. doi: 10.1056/NEJMc2008597. [Epub ahead of print] PubMed PMID: 32294339; PubMed Central PMCID: PMC7179967. Link:

<https://www.nejm.org/doi/full/10.1056/NEJMc2008597>

NEJM: Oxley TJ, Mocco J, Majidi S, Kellner CP, Shoirah H, Singh IP, De Leacy RA, Shigematsu T, Ladner TR, Yaeger KA, Skliut M, Weinberger J, Dangayach NS, Bederson JB, Tuhim S, Fifi JT. Large-Vessel Stroke as a Presenting Feature of Covid-19 in the Young. N Engl J Med. 2020 May 14;382(20):e60. doi: 10.1056/NEJMc2009787. Epub 2020 Apr 28. PubMed PMID: 32343504; PubMed Central PMCID: PMC7207073. Link:

<https://www.nejm.org/doi/full/10.1056/NEJMc2009787>

NPR: National Public Radio. Sarah McCammon. 13 USS Roosevelt Sailors Test Positive For COVID-19, Again (16 May 2020). Link: <https://www.npr.org/sections/coronavirus-live-updates/2020/05/16/857379338/5-uss-roosevelt-sailors-test-positive-for-covid-19-again>

Radiology: Wang Y, Dong C, Hu Y, Li C, Ren Q, Zhang X, Shi H, Zhou M. Temporal Changes of CT Findings in 90 Patients with COVID-19 Pneumonia: A Longitudinal Study. Radiology. 2020 Mar 19:200843. doi: 10.1148/radiol.2020200843. [Epub ahead of print] PubMed PMID: 32191587. Link: <https://pubs.rsna.org/doi/full/10.1148/radiol.2020200843>

Reuters: Reuters. Stephanie Nebehay. WHO is investigating reports of recovered COVID patients testing positive again (11 April 2020). Link: <https://www.reuters.com/article/us-health-coronavirus-who/who-is-investigating-reports-of-recovered-covid-patients-testing-positive-again-idUSKCN21T0F1>

Science: Science. Meagan Cantwell. Watch the coronavirus' rampage through the body (14 May 2020). Link: <https://www.sciencemag.org/news/2020/05/watch-coronavirus-rampage-through-body>

Science: Science. Kelley Servick For survivors of severe COVID-19, beating the virus is just the beginning (08 April 2020). Link: <https://www.sciencemag.org/news/2020/04/survivors-severe-covid-19-beating-virus-just-beginning>

Thorax: Hui DS, Joynt GM, Wong KT, Gomersall CD, Li TS, Antonio G, Ko FW, Chan MC, Chan DP, Tong MW, Rainer TH, Ahuja AT, Cockram CS, Sung JJ. Impact of severe acute respiratory syndrome (SARS) on pulmonary function, functional capacity and quality of life in a cohort of survivors. Thorax. 2005 May;60(5):401-9. PubMed PMID: 15860716; PubMed Central PMCID: PMC1758905. Link: <https://thorax.bmj.com/content/60/5/401>

Thromb Res: Klok FA, Kruip MJHA, van der Meer NJM, Arbous MS, Gommers DAMPJ, Kant KM, Kaptein FHJ, van Paassen J, Stals MAM, Huisman MV, Endeman H. Incidence of thrombotic complications in critically ill ICU patients with COVID-19. Thromb Res. 2020 Apr 10. pii: S0049-3848(20)30120-1. doi: 10.1016/j.thromres.2020.04.013. [Epub ahead of print] PubMed PMID: 32291094; PubMed Central PMCID: PMC7146714. Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7146714/pdf/main.pdf>

Travel Med Infect Dis: Alvarez-Moreno CA, Rodríguez-Morales AJ. Testing Dilemmas: Post negative, positive SARS-CoV-2 RT-PCR - is it a reinfection? Travel Med Infect Dis. 2020 May 13:101743. doi: 10.1016/j.tmaid.2020.101743. [Epub ahead of print] PubMed PMID: 32416153. Link: <https://www.clinicalkey-com.eu1.proxy.openathens.net/#!/content/journal/1-s2.0-S1477893920302222>

Vox: Vox. Lois Parshley. The emerging long-term complications of COVID-19, explained (08 May 2020). Link: <https://www.vox.com/2020/5/8/21251899/coronavirus-long-term-effects-symptoms>

WHO: World Health Organization. Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19) (accessed 18 May 2020). Link: <https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf>

World J Urol: Abobaker A, Raba AA. Does COVID-19 affect male fertility? World J Urol. 2020 Apr 21. doi: 10.1007/s00345-020-03208-w. [Epub ahead of print] PubMed PMID: 32318855; PubMed Central PMCID: PMC7171435. Link: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7171435/pdf/345_2020_Article_3208.pdf

Summaries from Other Sources

CEBM: Centre for Evidence-Based Medicine, University of Oxford. Jones L, Candy B, Roberts N, Ondruskova T, Short T, Sampson EL. How can healthcare workers adapt non-pharmacological

treatment – whilst maintaining safety – when treating people with COVID-19 and delirium? (06 May 2020, updated 19 May 2020) Link: <https://www.cebm.net/covid-19/how-can-healthcare-workers-adapt-non-pharmacological-treatment-whilst-maintaining-safety-when-treating-people-with-covid-19-and-delirium/>

CEBM: Centre for Evidence-Based Medicine, University of Oxford. Raymon M, Ching-A-Sue G, Van Hecke O. Mast cell stabilisers, leukotriene antagonists and antihistamines: A rapid review of effectiveness in COVID-19 (18 May 2020) Link: <https://www.cebm.net/covid-19/mast-cell-stabilisers-leukotriene-antagonists-and-antihistamines-a-rapid-review-of-effectiveness-in-covid-19/>

Selected Primary Literature

Ann Intern Med: Mackey K, King VJ, Gurley S, Kiefer M, Liederbauer E, Vela K, Sonnen P, Kansagara D. Risks and Impact of Angiotensin-Converting Enzyme Inhibitors or Angiotensin-Receptor Blockers on SARS-CoV-2 Infection in Adults. Ann Intern Med. 2020 May 15. doi: 10.7326/M20-1515. [Epub ahead of print] PubMed PMID: 32422062. Link: <https://www.acpjournals.org/doi/10.7326/M20-1515>

Cell: Blanco-Melo D, Nilsson-Payant BE, Liu WC, Uhl S, Hoagland D, Møller R, Jordan TX, Oishi K, Panis M, Sachs D, Wang TT, Schwartz RE, Lim JK, Albrecht RA, tenOever BR. Imbalanced Host Response to SARS-CoV-2 Drives Development of COVID-19. Cell. 2020 May 13. pii: S0092-8674(20)30489-X. doi: 10.1016/j.cell.2020.04.026. [Epub ahead of print] PubMed PMID: 32416070. Link: [https://www.cell.com/cell/fulltext/S0092-8674\(20\)30489-X](https://www.cell.com/cell/fulltext/S0092-8674(20)30489-X)

Clin Infect Dis: Rawson TM, Moore LSP, Zhu N, Ranganathan N, Skolimowska K, Gilchrist M, Satta G, Cooke G, Holmes A. Bacterial and fungal co-infection in individuals with coronavirus: A rapid review to support COVID-19 antimicrobial prescribing. Clin Infect Dis. 2020 May 2. pii: ciaa530. doi: 10.1093/cid/ciaa530. [Epub ahead of print] PubMed PMID: 32358954; PubMed Central PMCID: PMC7197596. Link: <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa530/5828058>

Int J Infect Dis: Qi L, Yang Y, Jiang D, Tu C, Wan L, Chen X, Li Z. Factors associated with duration of viral shedding in adults with COVID-19 outside of Wuhan, China: A retrospective cohort study Published: May 17, 2020 DOI: <https://doi.org/10.1016/j.ijid.2020.05.045> Link: [https://www.ijidonline.com/article/S1201-9712\(20\)30352-0/fulltext](https://www.ijidonline.com/article/S1201-9712(20)30352-0/fulltext)

JAMA: Sood N, Simon P, Ebner P, Eichner D, Reynolds J, Bendavid E, Bhattacharya J. Seroprevalence of SARS-CoV-2-Specific Antibodies Among Adults in Los Angeles County, California, on April 10-11, 2020. JAMA. 2020 May 18. doi: 10.1001/jama.2020.8279. [Epub ahead of print] PubMed PMID: 32421144. Link: <https://jamanetwork.com/journals/jama/fullarticle/2766367>

JAMA Netw Open: Lyu W, Wehby GL. Comparison of Estimated Rates of Coronavirus Disease 2019 (COVID-19) in Border Counties in Iowa Without a Stay-at-Home Order and Border Counties in Illinois With a Stay-at-Home Order. JAMA Netw Open. 2020 May 1;3(5):e2011102. doi: 10.1001/jamanetworkopen.2020.11102. PubMed PMID: 32413112. Link: <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2766229>

Lancet Psychiatry: Psychiatric and neuropsychiatric presentations associated with severe coronavirus infections: a systematic review and meta-analysis with comparison to the COVID-19 pandemic Published: May 18, 2020 DOI: [https://doi.org/10.1016/S2215-0366\(20\)30203-0](https://doi.org/10.1016/S2215-0366(20)30203-0) Link: [https://www.thelancet.com/journals/lanpsy/article/PIIS2215-0366\(20\)30203-0/fulltext](https://www.thelancet.com/journals/lanpsy/article/PIIS2215-0366(20)30203-0/fulltext)

Nature: Pinto D, Park YJ, Beltramello M, et al. Cross-neutralization of SARS-CoV-2 by a human monoclonal SARS-CoV antibody (published 18 May 2020). Nature. <https://doi.org/10.1038/s41586-020-2349-y> Link: <https://www.nature.com/articles/s41586-020-2349-y>

In Brief

Atlantic: The Atlantic. Emily Oster. The 'Just Stay Home' Message Will Backfire (14 May 2020). Link: <https://www.theatlantic.com/ideas/archive/2020/05/just-stay-home-message-will-backfire/61162>

DOD: Department of Defense. Army News Service. Thomas Brading. Army Anti-Terrorism Technology Helps Pinpoint COVID-19 Cases (13 May 2020). Link: <https://www.defense.gov/Explore/News/Article/Article/2185429/army-anti-terrorism-technology-helps-pinpoint-covid-19-cases/>

HHS: US Department of Health & Human Services. Trump Administration Announces Framework and Leadership for 'Operation Warp Speed' (14 May 2020). Link: <https://www.hhs.gov/about/news/2020/05/15/trump-administration-announces-framework-and-leadership-for-operation-warp-speed.html>

Miami Herald: Taylor Dolven. No information. No way off. 100,000 crew members remain in cruise ship limbo for months (17 May 2020, updated 18 May 2020). Link: <https://www.miamiherald.com/news/business/tourism-cruises/article242565281.html>

NPR: National Public Radio. Joe Palca. New Coronavirus Vaccine Candidate Shows Promise In Early, Limited Trial (18 May 2020). Link: <https://www.npr.org/sections/coronavirus-live-updates/2020/05/18/857997341/new-coronavirus-vaccine-candidate-shows-promise-in-early-limited-trial>

NYT: New York Times. Jan Hoffman. 'I can't turn my brain off': PTSD and burnout threaten medical workers (16 May 2020). Link: <https://www.nytimes.com/2020/05/16/health/coronavirus-ptsd-medical-workers.html>

NYT: New York Times. Andrew Jacobs, Michael D. Shear, and Edward Wong. U.S.-China Feud Over Coronavirus Erupts at World Health Assembly (18 May 2020, updated 19 May 2020). Link: <https://www.nytimes.com/2020/05/18/health/coronavirus-who-china-trump.html>

Pandora Report: The Pandora Report. The Coronavirus Chronicles (accessed 14 May 2020). Link: <https://pandorareport.org/publications/coronavirus-chronicles/>

WashPo: Washington Post. Teo Armus. Trump threatens to permanently cut WHO funding, leave body if changes aren't made within 30 days (19 May 2020). Link: <https://www.washingtonpost.com/nation/2020/05/19/who-funding-trump/>

YT: YouTube. Bob Ross channel (accessed 19 May 2020). Link: <https://www.youtube.com/user/BobRossInc/videos>

YT: YouTube. charvi ashtekar – zentangle art || doodle patterns || zen-doodle (accessed 19 May 2020). Link: https://www.youtube.com/watch?v=gBsW_wpFBxc

YT: YouTube. ExpressingtheSelf – how to grow a mandala (accessed 19 May 2020). Link: <https://www.youtube.com/watch?v=g16B64myG-E>

YT: YouTube. Some Good News channel (accessed 19 May 2020). Link: https://www.youtube.com/channel/UCOe_y6KKvS3PdIfb9q9pGug/videos